

I CLAIM:

1. Apparatus for non-destructively inspecting materials housed in containers, said apparatus comprising:

a conveyor for conveying said containers along a conveying path in a conveying direction;

an X-ray beam emitter mounted at a first position adjacent said conveying path for emitting an X-ray beam passing through said containers as they are conveyed along said conveying path;

a detector mounted at a second position adjacent said conveying path on a side of said conveying path opposite that of said first position for receiving a transilluminated portion of the X-ray beam that has passed through said containers and generating therefrom an image signal representative of the transilluminated portion; and

wherein said X-ray beam emitter is oriented to direct the X-ray beam at an angle to a plane perpendicular to the conveying direction, said angle lying in an angle range of 8° to 20° inclusive and wherein said detector is properly positioned and oriented to receive the angled X-ray beam.

2. Apparatus as in claim 1, wherein said angle range is from 8° to 12°, inclusive.

3. Apparatus as in claim 2, wherein said angle range is from 9° to 11°, inclusive.

4. Apparatus as in claim 3, wherein said angle is approximately 10°.

5. Apparatus as in claim 1, wherein said detector's position can be selectively adjusted toward and away from said conveying path as well as

along a line parallel to said conveying path.

6. Apparatus as in claim 1, wherein there is only one beam emitter and one detector for the conveying path.

7. A method for the non-destructive inspection of material housed in containers, said method comprising:

conveying the containers along a conveying path;

passing an X-ray beam through said containers as they are conveyed along said conveying path;

receiving a transilluminated portion of the X-ray beam passed through said containers; and

generating a signal representative of the transilluminated portion and therefore of an image representative of said material;

wherein said X-ray beam is directed at an angle to a plane perpendicular to the conveying path, said angle lying in an angle range of 8° to 20° inclusive.

8. A method as in claim 7, wherein said angle is in a range of 8° to 12°, inclusive.

9. A method as in claim 8, wherein said angle is in a range of 9° to 11°, inclusive.

10. A method as in claim 9, wherein said angle is approximately 10°.

11. A method as in claim 7, wherein there is only one X-ray beam and one detector along the conveying path for carrying out said method.